What is claimed:

1. A piezoelec driver apparatus for controlling the operation of a vibrating element having a mechanical resonator, apparatus comprising:

a vibrating element having an inherent capacitance;

at least one switching element allowing the application of a predetermined signal;

at least one electrical resonator driver circuit driving the vibrating element, wherein the driver circuit is electrically coupled to and activated by the switching element;

at least one inductive coil electrically coupled to the vibrating element to form an electric resonator together with the capacitance of the vibrating element so the signal excites the driver circuit at a predetermined frequency, the coil being either mounted to the vibratory element or mounted to a common support with the vibratory element.

2. The apparatus of Claim 1, wherein the vibrating element includes a piezoelectric element driving the mechanical resonator.

3. The apparatus of Claim 1, wherein the vibrating element is a piezoelectric element driving a resonator and the coil encircles a portion of the piezoelectric element or the mechanical resonator.

4. The apparatus of Claim 1, wherein the vibrating element comprises a piezoelectric element driving the mechanical resonator, the resonator having a selected contacting portion, the piezoelectric element driving the resonator at a first frequency provided by the driver circuit to cause the resonator to vibrate in two modes that cause the selected contacting portion to move in a first elliptical motion of sufficient magnitude to move a driven element in a first direction when the selected contacting portion and driven/ element are resiliently urged into contact.

5. The apparatus of Claim 4, where the driver circuit and switching element are located more than four times further away from the piezoelectric element than the coil.

6. The apparatus of Claim 4, wherein the same electrical conductor used to form the coil also connects the piezoelectric element to the driver circuit.

7. A driver apparatus in combination with a vibrating element having a piezoelectric element vibrating the mechanical resonator with a selected contacting portion located to engage and move a driven element in a first direction during use of the vibrating apparatus, the piezoelectric element having an inherent capacitance, the combination comprising:

at least one control element;

a piezoelectric resonator driver circuit having a plurality of unidirectional electrical gates to drive the piezoelectric element, the driver circuit being electrically coupled to and controlled by the control element; the piezoelectric element being electrically coupled to and paired with one of the unidirectional gates; and

at least one electromagnetic storage element electrically coupled to the piezoelectric element, wherein the electromagnetic storage element forms an electric resonator together with the capacitance of the vibrating element.

8. The combination of Claim 7, wherein the electromagnetic storage element comprises an electromagnetic inductor coil.

9. The combination of Claim 7, wherein the unidirectional electrical gates comprise a diode arranged to prevent a negative electrical voltage to the piezoelectric element.

10. The combination of Claim 9, wherein the driver apparatus resonates at a modulated predetermined first resonant frequency selected to cause the vibrating element to cause the selected contacting portion to move in the first elliptical motion with sufficient amplitude to move the driven element in the first direction when the selected contacting portion engages the driven element.

11. The combination of Claim 10, wherein the driver apparatus resonates at a modulated predetermined second resonant frequency selected to cause the vibrating element to cause the selected contacting portion to move in a second elliptical motion with sufficient amplitude to move a driven element in a second direction when the selected contacting portion engages the driven element.

12. The combination of Claim 10, wherein the inductor encircles a portion of the resonator.

13. The apparatus of Claim 10, further comprising a resistor electrically coupled with the inductor and piezoelectric element and gate element to maintain an input voltage to the piezoelectric element within predetermined operating parameters.

14. The apparatus of Claim 10, wherein the diode is coupled to a resistor in an orientation to prevent a negative voltage in the piezoelectric element.

15. A method for controlling the operation of a vibrating element having a piezoelectric element driving a resonator, the piezoelectric element being driven by an electrical signal, comprising:

placing a control element in electrical communication with the piezoelectric element and an inductor to alternate the electric signal between the inductor and piezoelectric element, the piezoelectric element providing a capacitance to function as a switched resonance L-C circuit so the electrical signal can resonantly drive the vibrating element at a first frequency, a portion of the inductor being formed on the resonator.

16. A method for controlling the operation of a vibrating element having a piezoelectric element driving a mechanical resonator, the piezoelectric element being driven by an electrical signal, comprising:

placing a control element in electrical communication with the piezoelectric element and an inductor to alternate the electric signal between the inductor and piezoelectric element, the piezoelectric element providing a capacitance to function as a switched resonance L-C circuit so the electrical signal can resonantly drive the vibrating element at a first frequency; and

selecting the first frequency and configuring the vibrating element to cause a selected contacting portion of the vibrating element to move in a first elliptical path with sufficient amplitude to move a driven element in a first direction when the selected contacting portion engages the driven element.

17. The method of Claim 16, wherein the voltage to drive the piezoelectric element at the first frequency is greater than the supply voltage to the circuit.

18. The method of Claim 16, further comprising placing a resistor in electrical communication with the piezoelectric element to shape the electrical signal provided to the piezoelectric element.

19. The method of Claim 16, comprising forming at least a portion of the inductor around a portion of the vibratory element.

20. The method of Claim 16, wherein the inductor and piezoelectric element provide a capacitance to function as a switched resonance L-C circuit so that a second electrical signal can resonantly drive the vibrating element at a second frequency, the second frequency selected in conjunction with the configuration of the vibratory element and its mounting to cause the selected contacting portion of the vibrating element to move in a second elliptical path with sufficient amplitude to move the driven element in a second direction when the selected contacting portion engages the driven element.

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